

Appl. No. 10/748,734
Amdt. Dated November 16, 2006
Reply to Office Action of August 16, 2006

Attorney Docket No. 88519.0001
Customer No. 26021

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REMARKS

This application has been carefully reviewed in light of the Office Action dated August 16, 2006. Claims 1, 4-6, 8-11, 13-15 and 17-19 remain pending in this application. Claims 1, 4, 5, 13 and 14 are the independent claims. Claims 2, 3, 7, 12, 16 and 20-25 have been canceled without prejudice. It is believed that no new matter is involved in the amendments or arguments presented herein. Reconsideration and entrance of the amendment in the application are respectfully requested.

Non Art-Based Rejections

Claims 4-6 and 8-11 were rejected under 35 U.S.C. § 112, first paragraph, relating to written description. In particular, the Office Action asserts those claims are directed to transparent electrode including Mg-doped ZnO, and the Specification of present application does not disclose that.

Applicant respectfully disagrees with that assertion. Specification at page 3, SUMMARY OF THE INVENTION, states the following:

The inventor has discovered that doping ZnO, which is employed as a transparent electrode of a light emitting device, with Mg leads to a greatly improved acid resistance. In Fig. 1, an experimental result of a measured acid resistance of Mg-doped ZnO transparent electrodes with a doped-Mg amount as parameter is shown....

Then, in order to accomplish the object mentioned above, the invention provides a transparent electrode made up of ZnO as its main material, wherein its surface is covered with a Mg-doped ZnO film. *Specification at page 3, line 2-4th line from the bottom.*

That cited portion of Specification discloses Mg-doped ZnO transparent electrode, and that transparent electrode includes ZnO as the main material and its surface is covered with a Mg-doped ZnO film. Accordingly, Claims 4-6 and 8-11

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comply with the requirement § 112. Reconsideration and withdrawal of the above § 112 are respectfully requested.

Art-Based Rejections

Claims 4, 6, 10, 11, 13-15, and 19 were rejected under 35 U.S.C. § 103(a) over U.S. Patent Pub. No. 2002/0126719 A1 (Kadota) in view of WO 02/89223 (Ishizaki); claim 5 was rejected under § 103(a) over Kadota in view of Ishizaki and U.S. Patent No. 6,084,899 (Shakuda); Claims 8-9 and 17-18 were rejected under § 103(a) over Kadota in view of Ishizaki as applied to claim 13, and further in view of U.S. Patent No. 6,787,435 B2 (Gibb).

Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the arguments below.

The Kadota Reference

Kadota is directed to a semiconductor photonic device having GaN-based compound semiconductor layer as an active layer (*Kadota; para. [0002]*).

The Ishizaki Reference

Ishizaki is directed to a method of fabricating a light emitting device having a light emitting layer portion which includes a p-type $\text{Mg}_x\text{Zn}_{1-x}\text{O}$ layer. The p-type $\text{Mg}_x\text{Zn}_{1-x}\text{O}$ layer is grown by a metal organic vapor-phase epitaxy process while supplying organometallic gases, an oxygen component source gas and a p-type dopant gas into a reaction vessel, and is annealed during and/or after completion of the growth thereof in an oxygen-containing atmosphere (*Ishizaki; para. [0015]*).

Appl. No. 10/748,734
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Attorney Docket No. 88519.0001
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The Shakuda Reference

Shakuda is directed to a semiconductor light emitting device of double hetero junction including an active layer and clad layers. The clad layers include an n-type layer and p-type layer. The clad layers sandwich the active layer. A band gap energy of the clad layers is larger than that of the active layer. The band gap energy of the n-type clad layer is smaller than of the p-type clad layer (*Shakuda; Abstract*).

The Gibb Reference

Gibb is directed to a light-emitting element. According to Gibb, a light emitting diode (LED) includes a sapphire substrate (26) having front and back sides (33, 35), and a plurality of semiconductor layers (28, 30, 32) deposited on the front side (33) of the sapphire substrate (26). The semiconductor layers (28, 30, 32) define a light-emitting structure that emits light responsive to an electrical input. A metallization stack (40) includes an adhesion layer (34) deposited on the back side (35) of the sapphire substrate (26), and a solderable layer (38) connected to the adhesion layer (34) such that the solderable layer (38) is secured to the sapphire substrate (26) by the adhesion layer (34). A support structure (42) is provided on which the LED is disposed. A solder bond (44) is arranged between the LED and the support structure (42). The solder bond (44) secures the LED to the support structure (42). (*Gibb; Abstract*).

The Claims are Patentable Over the Cited References

The present application is generally directed to light emitting devices having transparent electrodes that inhibit degradation

As defined by independent Claim 1, a transparent electrode is made up of ZnO as its main material, and its surface is covered with Mg-Doped ZnO film. The

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electrode made up of ZnO as its main material is formed on a semiconductor layer.
The semiconductor layer has a GaN system semiconductor layer

The applied references do not disclose or suggest the features of present invention as recited in the claims. In particular, the applied references do not disclose or suggest, "the electrode made up of ZnO as its main material is formed on a semiconductor layer, and wherein the semiconductor layer comprises a GaN system semiconductor layer," as recited in independent Claim 1.

Regarding that feature, the Office Action asserts that Kadota discloses ZnO layer 43 being formed on layers 44/45/46/47/48, and that discloses the above feature. However, FIG.4 of Kadota illustrates layers 44/45/46/47/48 being formed on the ZnO layer 43, and not the other way around. Accordingly, Kadota does not disclose or suggest the features of independent claim 1.

The applied ancillary references are not seen to remedy the deficiencies of Kadota.

Accordingly, the applied references do not teach or suggest the above features of the present invention as recited in independent Claim 1.

Since the applied references fail to disclose, teach or suggest the above features recited in independent Claim 1, that references cannot be said to anticipate or render obvious the invention which is the subject matter of that claim.

Accordingly, independent Claim 1 is believed to be in condition for allowance and such allowance is respectfully requested.

Applicant respectfully submits that independent Claims 4, 5, 13, and 14 reciting similar features are allowable for the least the same reasons as those discussed in connection with independent Claim 1.

The remaining claims depend either directly or indirectly from the independent claims, and recite additional features of the invention which are

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neither disclosed nor fairly suggested by the applied references are therefore also
believed to be in condition for allowance. Such allowance is respectfully requested.

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Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (310) 785-4721 to discuss the steps necessary for placing the application in condition for allowance.

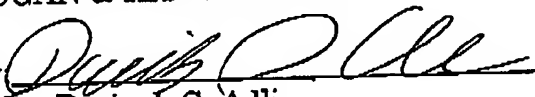
If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,

HOGAN & HARTSON L.L.P.

Date: November 16, 2006

By



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